UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/626,867	07/25/2003	Jae-sun Lee	1293.1866	9786

49455   7590   08/05/2008
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ART UNIT	PAPER NUMBER
2621	

MAIL DATE	DELIVERY MODE
08/05/2008	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE *3* MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____ .
2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.
3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-29* is/are pending in the application.
    4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5)☐ Claim(s) _____ is/are allowed.
6)☒ Claim(s) *1-29* is/are rejected.
7)☐ Claim(s) _____ is/are objected to.
8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.
10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.
    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
    a)☒ All   b)☐ Some * c)☐ None of:
        1.☒ Certified copies of the priority documents have been received.
        2.☐ Certified copies of the priority documents have been received in Application No. _____ .
        3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____ .
4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____ .

DETAILED ACTION

Claim Rejections - 35 USC § 101

1.   35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

2.   Claims 1-5 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

> The USPTO "Interim Guidelines for Examination of Patent Applications for Patent Subject Matter Eligibility" (Official Gazette notice of 22 November 2005), Annex IV, reads as follows:
>
> Nonfunctional descriptive material that does not constitute a statutory process, machine, manufacture or composition of matter and should be rejected under 35 U.S.C. Sec. 101. Certain types of descriptive material , such as music, literature, art, photographs, and mere arrangements or compilations of facts or data, without any functional interrelationship is not a process, machine, manufacture or composition of matter. USPTO personnel should be prudent in applying the foregoing guidance. Nonfunctional descriptive material may be claimed in combination with other functional descriptive multi-media material on a computer-readable medium to provide the necessary functional and structural interrelationship to satisfy the requirements of 35 U.S.C. Sec. 101. The presence of the claimed nonfunctional descriptive material is not necessarily determinative of nonstatutory subject matter. For example, a computer that recognizes a particular grouping of musical notes read from memory and upon recognizing that particular sequence, causes another defined series of notes to be played, defines a functional interrelationship among that data and the computing processes performed when utilizing that data, and as such is statutory because it implements a statutory process.

Claims 1-5 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter as follows. Claims 1-5 recite an information storage medium which does not impart functionality to a computer or computing device, and is thus considered nonfunctional descriptive material. Such nonfunctional descriptive material, in the absence of a functional interrelationship with a computer, does not constitute a statutory process, machine, manufacture or composition of matter and is thus non-statutory per se.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 1-5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morris

(2001/0007568 A1) and Rodriguez et al. (US 2002/0059623 A1).

Regarding Claim 1, Morris teaches an information storage medium, comprising:

- multi-streams (Paragraph [0008]); and

- reproduction control information comprising conversion information to convert the multi-
  streams and/or the interactive contents (in at least Paragraphs [0064+]) into digital
  television (DTV) streams (Paragraphs [0046,0047,0051]).

Morris fails to explicitly teach interactive contents comprising information that enables an

interface with a user. Rodriguez et al. teaches interactive contents comprising information that

enables an interface with a user (in at least Paragraphs [0019,0030,0032] - interactive

applications).

It would have been obvious to one of ordinary skill in the art at the time the invention was

made to have a medium capable of communication with user to allow user defined controls for

facilitation of desired programming viewed by user.

Regarding Claim 2, Morris teaches the information storage medium of claim 1, wherein

the multi-streams comprise a moving picture experts group-2 program stream (MPEG-2 PS), an

MPEG-4 format stream, an MPEG-7 format stream, and/or a Wavelet transform format stream (Paragraph [0050]).

Regarding Claim 3, Morris teaches the information storage medium of claim 1, wherein the reproduction control information further comprises: identification information identifying the multi-streams from the interactive contents to perform a DTV stream conversion (Paragraphs [0051,0052] – PID); and control information controlling a generation of the DTV streams (Paragraph [0052] – control information).

Regarding Claim 4, Morris teaches the information storage medium of claim 1, wherein the reproduction control information further comprises management information and search information to reproduce the multi-streams and the interactive contents (Paragraph [0052] – time stamps).

Regarding Claim 5, Morris teaches the information storage medium of claim 4, wherein the reproduction control information further comprises: information on types of the multi-streams and the interactive contents (Paragraphs [0051,0052] – PID); time information to synchronously reproduce and synchronously convert the multi-streams and the interactive contents (Paragraph [0052] – system time); time information to independently reproduce and independently convert the multi-streams and the interactive contents (Paragraph [0052] – system time);; additional information on start times, reproduction periods (Paragraph [0052] – system clock reference for DTS/PTS).

Morris fails to explicitly teach parental ranking information on the multi-streams and the interactive contents and titles of the multi-streams and the interactive contents; and information

of detailed descriptions of the multi-streams and the interactive contents. Rodriguez teaches parental ranking information on the multi-streams and the interactive contents (Paragraph [0073]) and titles of the multi-streams and the interactive contents (Paragraphs [0071-0073]); and information of detailed descriptions of the multi-streams and the interactive contents (Paragraph [0073]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have various attributes concerning the interactivity of a medium to allow user necessary information to select and choose from according to desired preferences.

Regarding Claim 6, Morris teaches a method of reproducing data recorded on an information storage medium of a DTV, the method comprising:

- reading out multi-streams (Paragraph [0008]), interactive contents, and reproduction control information from the information storage medium (Fig. 1, 102) having conversion information (in at least Paragraphs [0064+]) to convert the multi-streams and/or the interactive contents into DTV streams (Paragraphs [0046,0047,0051]);

- converting the read-out multi-streams into transport streams appropriate to the DTV (Paragraphs [0046,0047,0051]); and

- multiplexing the transport streams and the DTV interactive contents based on the read-out reproduction control information to generate DTV streams (Paragraphs [0029,0047,0051,0061,0062,0064]).

Morris fails to explicitly teach interactive contents and converting the read-out interactive contents into DTV interactive contents. Rodriguez et al. teaches interactive contents (in at least Paragraphs [0019,0030,0032] - interactive applications) and converting the read-out interactive contents into DTV interactive contents (Paragraphs [0036,0042]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a medium capable of communication with user to allow user defined controls for facilitation of desired programming viewed by user.

Regarding Claim 7, Morris teaches the method of claim 6, wherein the multi-streams comprise an MPEG-2 PS, an MPEG-4 format stream, an MPEG-7 format stream, and/or a Wavelet transform format stream (Paragraph [0050]).

Regarding Claim 8, Morris teaches the method of claim 7, wherein the MPEG-2 PS is converted into an MPEG-2 TS during the conversion of the-transport streams (in at least Paragraphs [0007,0063+]).

Regarding Claim 10, Morris teaches the method of claim 6, wherein converting the DTV interactive contents comprises:

- checking a validation of the interactive contents comprising a source document, which is recorded on the information storage medium (Paragraphs [0004,0089,0109]); and
- when the source document is validated, converting comments, process indicators, document type declarations, start tags, end tags, named character references, numeric character references, marked sections, and parsed character data in the source document into a DTV document format to generate a target document comprising the DTV interactive contents (Paragraphs [0051-0053;0058]).

Regarding Claim 12, Morris teaches an optical recording/reproducing apparatus to reproduce data recorded on an information recording medium on a DTV, the apparatus comprising:

- a read-out unit reading out multi-streams (Paragraph [0008]), interactive contents, and reproduction control information from the information storage medium (Fig. 1, 102) having conversion information (in at least Paragraphs [0064+]) to convert the multi-streams and/or the interactive contents into DTV streams (Paragraphs [0046,0047,0051]);

- a first transcoder converting the multi-streams read-out by the read-out unit into transport streams appropriate to the DTV (Paragraphs [0046,0047,0051]);

- a second transcoder converting the interactive contents read out by the read-out unit into DTV interactive contents (Paragraphs [0046,0047,0051]); and

- a generator multiplexing the transport streams and the DTV interactive contents and generating DTV streams according to the reproduction control information read out by the read-out unit (Paragraphs [0029,0047,0051,0061,0062,0064]).

Morris fails to explicitly teach interactive contents and converting the read-out interactive contents into DTV interactive contents. Rodriguez et al. teaches interactive contents (in at least Paragraphs [0019,0030,0032] - interactive applications) and converting the read-out interactive contents into DTV interactive contents (Paragraphs [0036,0042]) and a first and second transcoder.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a medium capable of communication with user to allow user defined controls for facilitation of desired programming viewed by user. Also, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make two transcoders

separated, since it has been held that constructing a formerly integral structure in various

elements involves only routine skill in the art. Nerwin v. Erlichman, 168 USPQ 177, 179.

Regarding Claim 13, Morris teaches the apparatus of claim 12, but fails to explicitly

teach further comprising: a digital interface interfacing the DTV streams generated by the

generator to transfer to the DTV.

Rodriguez et al. teaches a digital interface interfacing the DTV streams generated by the

generator to transfer to the DTV (in at least Paragraphs [0019,0030,0032] - interactive

applications).

It would have been obvious to one of ordinary skill in the art at the time the invention was

made to have a medium capable of communication with user to allow user defined controls for

facilitation of desired programming viewed by user.

Claim 14 is rejected under the same grounds as claim 2.

Claim 15 is rejected under the same grounds as claim 8.

Regarding Claim 16, Morris teaches the apparatus of claim 15, wherein the first

transcoder comprises:

- a PS parse and demultiplex unit parsing a pack and a PES in PS data read out by the

  read-out unit to extract a video ES and an audio ES, an SCR from the pack, and

  PTS/DTS from a PES header (Paragraphs [0052,0065,0066,0072,0073]),

- a video rearranger searching a sequence start code and a picture start code in the video

  ES output from the PS parse and demultiplex unit to generate a first recognition signal

by access unit and to extract the PTS/DTS (Paragraphs
[0052,0053,0065,0066,0072,0073]);

- an audio rearranger obtaining a frame size according to audio synchronization
  information in the audio ES output from the PS parse and demultiplex unit to generate a
  second recognition signal by access unit and to extract the PTS (Paragraphs
  [0052,0055,0065,0066,0072,0073]);

- a PES packetizer assigning the PES header to the outputs of the video rearranger and
  the audio rearranger according to the first and second recognition signals, and inserting
  time stamps, which are obtained based on the PTS/DTS extracted by the video
  rearranger (Paragraphs [0052,0065,0066,0071,0072,0073]);

- a time controller determining a time alignment of an AV packet by using an SCR value
  following the SCR value of an initial pack provided from the PS parse and demultiplex
  unit to generate a time control signal, and generating a PSI packet period signal and a
  PCR insertion period signal by sampling the PCR that is obtained using the SCR value
  (Paragraphs [0052,0065,0066,0071,0072,0073]);

- an AV packet generator generating the AV packets from the output of the PES
  packetizer according to the PCR insertion period signal; a PAT packet generator
  generating PAT packets (Paragraphs [0051,0055,0080]);

- a PMT generator generating PMT packets (Paragraphs [0051,0055, 0080]);

- a TS packet scheduler generating a packet selection signal and schedules the AV
  packets, the PAT packets, the PMT packets, and the Null packets, wherein the time
  control of the AV packets is determined according to a presence of the time control
  signal, and the PAT packets and the PMT packets are alternately scheduled when the

PSI packet period signals are generated (Paragraphs

[0052,0065,0066,0071,0072,0073]); and

- a TS multiplexer multiplexing the AV packets, the PAT packets, the PMT packets, and

  the Null packets according to the packet selection signal to output the MPEG-2 TS

  (Paragraphs [0052,0065,0066,0071,0072,0073]).

Morris fails to explicitly teach generating and scheduling a null packet generator. Kato

teaches the null packets for generation, scheduling and multliplexing (Fig. 1, 14; Col. 2, line 9;

Col. 5, lines 4-14).

It would have been obvious to one of ordinary skill in the art at the time the invention was

made to have a null packet to add packets without significant data to a stream to stuff such

stream to avoid any bottleneck of insufficient resources.

Regarding Claim 17, Morris teaches the apparatus of claim 16, but fails to explicitly

teach wherein a priority of the TS packet scheduler comprises the AV packets being at a higher

priority than the PAT packets and the PMT packets being at a higher priority than the Null

packets. Kato teaches wherein a priority of the TS packet scheduler comprises the AV packets

being at a higher priority than the PAT packets and the PMT packets being at a higher priority

than the Null packets (Figs. 7, 8, 9).

It would have been obvious to one of ordinary skill in the art at the time the invention was

made to have a higher priority for entry point accumulation.

Claim 18 is rejected under the same grounds as claim 10.

Claim 19 is rejected under the same grounds as claim 11.

Regarding Claim 20, Morris teaches an apparatus to convert information stored in an information storage medium to DTV streams, comprising:

- a read-out unit reading out the information (in at least Paragraphs [0064+]) recorded on the information storage medium (Fig. 1, 102) comprising multi-streams (in at least Paragraphs [0008+]), and navigation information (Paragraphs [0046,0047,0051]);

- a signal processing unit processing the read-out information into reproduction signals (in at least Paragraphs [0008+]);

- a first transcoder converting the multi-streams into transport streams (Paragraphs [0046,0047,0051]);

- a DTV-stream generator generating DTV streams using the transport streams and the DTV interactive contents (Paragraphs [0029,0047,0051,0061,0062,0064]).

Morris fails to explicitly teach interactive contents and converting the read-out interactive contents into DTV interactive contents and a navigation engine controlling the DTV-stream generator based on the navigation information. Rodriguez et al. teaches interactive contents (in at least Paragraphs [0019,0030,0032] - interactive applications) and converting the read-out interactive contents into DTV interactive contents (Paragraphs [0036,0042]) a navigation engine controlling the DTV-stream generator based on the navigation information (Paragraphs [0064,0073]) and a first and second transcoder.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a medium capable of communication with user to allow user defined controls for facilitation of desired programming viewed by user. Also, it would have been obvious to one having ordinary skill in the art at the time the invention was made to make two transcoders separated, since it has been held that constructing a formerly integral structure in various elements involves only routine skill in the art. Nerwin v. Erlichman, 168 USPQ 177, 179.

Regarding Claim 21, Morris teaches the apparatus of claim 20, but fails to explicitly teach further comprising: a digital interface receiving the DTV streams from the DTV-stream generator and enabling data to be input bi-directionally.

Rodriguez et al. teaches a digital interface receiving the DTV streams from the DTV-stream generator and enabling data to be input bi-directionally (in at least Paragraphs [0019,0030,0032] - interactive applications).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a medium capable of communication with user to allow user defined controls for facilitation of desired programming viewed by user.

Regarding Claim 22, Morris teaches the apparatus of claim 20, but fails to explicitly teach wherein the digital interface comprises a user-to-user (UU) interface or a user-to-network (UN) interface.

Rodriguez et al. teaches a user-to-network (UN) interface (in at least Paragraphs [0019-0025,0030,0032] - interactive applications).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a connection to a network with user to allow user defined controls for facilitation of desired programming viewed by user.

Claim 23 is rejected under the same grounds as claim 2.

Regarding Claim 24, Morris teaches the apparatus of claim 20, but fails to explicitly teach wherein the interactive contents comprises HTML, XHTML, or XML, and joint photographic experts group (JPEG) and portable network graphics (PNG) files.

Rodriguez teaches wherein the interactive contents comprises HTML, XHTML, or XML, and joint photographic experts group (JPEG) and portable network graphics (PNG) files (Paragraph [0065]).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a connection with user to a network with browsing and navigational functionality to allow user a larger breadth of programming from which to choose.

Claim 25 is rejected under the same grounds as claim 4.

Claim 26 is rejected under the same grounds as claim 5.

Claims 27 and 28 are rejected under the same grounds as claim 11.

Claim 29 is rejected under the same grounds as claim 10.

5.   Claims 9 and 11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morris (US 2001/0007568 A1) in view of Rodriguez et al. (US 2002/0059623 A1) and further in view of Kato (US 7,106,946 B1).

Regarding Claim 9, Morris teaches the method of claim 8, wherein converting the transport streams comprises:

- parsing a pack and a packetized elementary stream (PES) of read-out PS data to extract a video elementary stream (ES) and an audio ES (Paragraphs [0053,0055]), to extract a

system clock reference (SCR) from the pack and to extract presentation time

stamp/decoding time stamp (PTS/DTS) from a PES header (Paragraphs

[0052,0065,0066,0072,0073]);

- assigning the PES header to the video ES and the audio ES (Paragraphs

    [0052,0053,0055]);

- inserting a proper time stamp based on the PTS/DTS (Paragraphs 0052,0072]);

- setting an internal timer to be an SCR value of an initial pack (Paragraphs [0052,0071]);

- generating a time control signal by determining a time alignment based on the SCR

    value of a sequential pack (Paragraphs [0052,0071]);

- sampling a program clock reference (PCR) obtained using the SCR to generate a

    program specific information (PSI) packet period signal and a PCR insertion period

    signal (Paragraphs [0051,0055,0080]);

- generating AV packets using a result of inserting the time stamp according to the PCR

    insertion period signal (Paragraphs [0051,0055,008]), and generating program

    association table (PAT) packets, program map table (PMT) packets (Paragraph [0051]);

- scheduling the AV packets, the PAT packets, the PMT packets, while a time control of

    the AV packets is determined based on the time control signal, and the PAT packets and

    the PMT packets are alternately scheduled (Paragraph [0051]) whenever the PSI packet

    period signals are generated (Paragraphs [0051,0055,0080]); and multiplexing the AV

    packets, the PAT packets, the PMT packets to generate the MPEG-2 TS (Paragraphs

    [0029,0047,0051,0061,0062,0064]).

Morris fails to explicitly teach generating and scheduling AV packets using null packets

and multiplexing the Null packets. Kato teaches the null packets for generation, scheduling and

multliplexing (Fig. 1, 14; Col. 2, line 9; Col. 5, lines 4-14).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have a null packet to add packets without significant data to a stream to stuff such stream to avoid any bottleneck of insufficient resources.

Regarding Claim 11, Morris teaches the method of claim 9, wherein generating the DTV streams comprises:

- forming program and system information protocol (PSIP) information by using information related to a DTV stream conversion in the reproduction control information, and PAT and PMT information (Paragraphs [0051,0055,0080]);

Morris fails to explicitly teach converting the transport streams and the DTV interactive contents into a digital storage media command and control (DSM-CC) standard to generate a DSM-CC message; converting the PSIP information into a PSIP private section; and multiplexing the PSIP private section and the DSM-CC message with the MPEG-2 TS to generate the DTV streams. Rodriguez teaches converting the transport streams and the DTV interactive contents into a digital storage media command and control (DSM-CC) standard to generate a DSM-CC message; converting the PSIP information into a PSIP private section; and multiplexing the PSIP private section and the DSM-CC message with the MPEG-2 TS to generate the DTV streams. (Paragraphs [0028,0030,0031,0033,0037,0071]).

It would have been obvious to one of ordinary skill in the art at the time the invention to one of ordinary skill in the art at the time the invention was made to have the DSM for providing the IP with broadcast data.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael Choi whose telephone number is (571) 272-9594. The examiner can normally be reached on Monday - Friday 9:00AM - 5:30PM (EST).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Marsha Banks-Harold can be reached on (571) 272-7905. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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